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(71) Applicant (for all designated States except US): **ALTANA PHARMA AG** [DE/DE]; Byk-Gulden-Str. 2, 78467 Konstanz (DE).

(72) Inventors; and

(75) Inventors/Applicants (for US only): **KOHL, Bernhard** [DE/DE]; Zum Bruehl 9, 78465 Konstanz (DE). **MUELLER, Bernd** [DE/DE]; Buecklestr. 84a, 78467 Konstanz (DE). **STURM, Ernst** [DE/DE]; Bohlstrasse 14, 78465 Konstanz (DE). **HUMMEL, Rolf-Peter** [DE/DE]; Altbohlstr. 32, 78315 Radolfzell (DE).

(74) Agents: **WOLF, Ulrich et al.**; ALTANA Pharma AG, Byk-Gulden-Str. 2, 78467 Konstanz (DE).

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Declarations under Rule 4.17:

- as to applicant's entitlement to apply for and be granted a patent (Rule 4.17(ii)) for the following designations AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SM, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, UZ, VC, VN, YU, ZA, ZM, ZW, ARIPO patent (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG)
- of inventorship (Rule 4.17(iv)) for US only

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For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

WO 2005/074929 A3

(54) Title: CALCIUM, POTASSIUM, ZINC, LITHIUM AND ALUMINIUM SALTS OF PANTOPRAZOLE AND (S)-PANTOPRAZOLE

(57) Abstract: The invention relates to calcium, potassium, zinc, lithium and aluminium salts of pantoprazole and (S)-pantoprazole salts and to medicaments comprising these compounds.

INTERNATIONAL SEARCH REPORT

International Application No

PCT/EP2005/050334

A. CLASSIFICATION OF SUBJECT MATTER

IPC 7 A61K31/4439 A61P1/04 C07D401/12

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 A61K A61P C07D

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, WPI Data, PAJ, BIOSIS, CHEM ABS Data, BEILSTEIN Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 94/24867 A (SEPRACOR INC) 10 November 1994 (1994-11-10) cited in the application Claims, examples	1-11
X	WO 99/27917 A (BYK GULDEN LOMBERG CHEM FAB ; NEY HARTMUT (DE); DIETRICH RANGO (DE)) 10 June 1999 (1999-06-10) cited in the application abstract; claim 5	1-11
X	WO 02/45686 A (BYK GULDEN LOMBERG CHEM FAB ; LINDER RUDOLF (DE); DIETRICH RANGO (DE)) 13 June 2002 (2002-06-13) cited in the application page 5, paragraph 3	1-11
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Further documents are listed in the continuation of box C.



Patent family members are listed in annex.

* Special categories of cited documents :

- "A" document defining the general state of the art which is not considered to be of particular relevance
- "E" earlier document but published on or after the international filing date
- "L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- "O" document referring to an oral disclosure, use, exhibition or other means
- "P" document published prior to the international filing date but later than the priority date claimed

- "T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
- "X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
- "Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.
- "&" document member of the same patent family

Date of the actual completion of the international search

17 May 2005

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Name and mailing address of the ISA

European Patent Office, P.B. 5818 Patentlaan 2
NL - 2280 HV Rijswijk
Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,
Fax: (+31-70) 340-3016

Authorized officer

Stroeter, T

INTERNATIONAL SEARCH REPORT

International Application No

PCT/EP2005/050334

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
P, X	WO 2004/013126 A (HUMMEL ROLF-PETER ; HANAUER GUIDO (DE); KOHL BERNHARD (DE); MUELLER BE) 12 February 2004 (2004-02-12) cited in the application page 3, line 6	1-3
A	WO 00/10995 A (BYK GULDEN LOMBERG CHEM FAB ; KOHL BERNHARD (DE)) 2 March 2000 (2000-03-02) cited in the application claims 1-3	1-11

INTERNATIONAL SEARCH REPORT

International application No.
PCT/EP2005/050334

Box II Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)

This International Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:
2. ☐ Claims Nos.:
because they relate to parts of the International Application that do not comply with the prescribed requirements to such an extent that no meaningful International Search can be carried out, specifically:
3. ☐ Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

This International Searching Authority found multiple inventions in this International application, as follows:

see additional sheet

1. ☐ As all required additional search fees were timely paid by the applicant, this International Search Report covers all searchable claims.
2. ☐ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this International Search Report covers only those claims for which fees were paid, specifically claims Nos.:
4. ☒ No required additional search fees were timely paid by the applicant. Consequently, this International Search Report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

1-11 (in part)

Remark on Protest

- ☐ The additional search fees were accompanied by the applicant's protest.
- ☐ No protest accompanied the payment of additional search fees.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. claims: 1-11 (in part)

Calcium salts of pantoprazole and (S)-pantoprazole and hydrates thereof and subject-matter related to these compounds.

2. claims: 1-11 (in part)

Potassium salts of pantoprazole and (S)-pantoprazole and hydrates thereof and subject-matter related to these compounds.

3. claims: 1-11 (in part)

Zinc salts of pantoprazole and (S)-pantoprazole and hydrates thereof and subject-matter related to these compounds.

4. claims: 1-11 (in part)

Lithium salts of pantoprazole and (S)-pantoprazole and hydrates thereof and subject-matter related to these compounds.

5. claims: 1-11 (in part)

Aluminium salts of pantoprazole and (S)-pantoprazole and hydrates thereof and subject-matter related to these compounds.

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/EP2005/050334

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
WO 9424867	A	10-11-1994	AU 6713194 A	21-11-1994
			AU 6904498 A	16-07-1998
			CA 2161256 A1	10-11-1994
			EP 0695123 A1	07-02-1996
			JP 8509736 T	15-10-1996
			WO 9424867 A1	10-11-1994
			US 2003086968 A1	08-05-2003
			US 2004142032 A1	22-07-2004
			US 5888535 A	30-03-1999
			US 2001008899 A1	19-07-2001
WO 9927917	A	10-06-1999	AU 1671799 A	16-06-1999
			WO 9927917 A1	10-06-1999
WO 0245686	A	13-06-2002	AU 3165402 A	18-06-2002
			BR 0115985 A	23-12-2003
			CA 2430816 A1	13-06-2002
			CN 1479611 A	03-03-2004
			WO 0245686 A2	13-06-2002
			EP 1341524 A2	10-09-2003
			JP 2004514733 T	20-05-2004
			US 2004101558 A1	27-05-2004
WO 2004013126	A	12-02-2004	DE 10234617 A1	12-02-2004
			AU 2003266956 A1	23-02-2004
			BR 0312996 A	28-06-2005
			CA 2493326 A1	12-02-2004
			WO 2004013126 A1	12-02-2004
			EP 1527066 A1	04-05-2005
			US 2004248940 A1	09-12-2004
WO 0010995	A	02-03-2000	DE 19843413 C1	30-03-2000
			AT 219074 T	15-06-2002
			AU 761715 B2	05-06-2003
			AU 5515699 A	14-03-2000
			BG 105173 A	30-11-2001
			BR 9914288 A	19-06-2001
			CA 2341031 A1	02-03-2000
			CN 1318065 A ,C	17-10-2001
			CZ 20010621 A3	15-08-2001
			DE 69901840 D1	18-07-2002
			DE 69901840 T2	22-05-2003
			DK 1105386 T3	30-09-2002
			EA 4431 B1	29-04-2004
			EE 200100054 A	17-06-2002
			WO 0010995 A1	02-03-2000
			EP 1105386 A1	13-06-2001
			ES 2178896 T3	01-01-2003
			HK 1037616 A1	25-10-2002
			HR 20010117 A1	28-02-2002
			HU 0103257 A2	28-02-2002
			JP 2002523411 T	30-07-2002
			MX PA01001758 A	17-04-2002
			NO 20010718 A	12-02-2001
			NZ 509761 A	29-08-2003
			PL 345993 A1	14-01-2002
			PT 1105386 T	29-11-2002
			SI 1105386 T1	31-12-2002

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/EP2005/050334

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
WO 0010995	A	SK 2362001 A3	11-09-2001
		TR 200100287 T2	23-07-2001
		US 2002188008 A1	12-12-2002
		US 6410569 B1	25-06-2002
		ZA 200100934 A	04-03-2002